

Occupancy and Revenue Gains from Culture Change in Nursing Homes: A Win-Win Innovation for a New Age of Long-Term Care

Amy E. Elliot, PhD

ABSTRACT

Culture change innovation in nursing homes refers to a progression from an institutional model of care to a more individualized, consumer-oriented practice that embraces choice and autonomy for residents and caregivers. This analysis explores increases to organizational occupancy and revenue by using culture change adaptation in nursing homes as a treatment variable in a quasi-experimental methodology to match adopter homes with control homes, and then utilizes a difference-in-difference approach to measure pre- to post-occupancy and revenue outcomes contrasted with control homes during the same time frame. Results indicate significant improvements in occupancy and revenue for sustained culture change adopters, suggesting that culture change is an intuitive adaptation and a win-win innovation for a new age of long-term care.

INTRODUCTION

Culture Change

In recent years, “culture change” innovation has emerged as an operational alternative to the traditional provision of long-term care in nursing homes. Culture change in nursing homes refers to a progression from an institutional model of care to a more individualized, consumer-oriented practice that embraces choice and autonomy for residents and caregivers. Nursing homes that are proponents of this process state that it commonly refers to techniques associated with consumer-directed adaptations in bathing, consistent staffing, eliminating nursing stations, promoting challenging activities and recreation, creating homelike environments, consumer-directed councils, and flexibility in sleep and dining schedules. Each of these areas contains common themes of change, such as autonomy in personal choices for the residents, consistent staffing, improved communication between residents and staff, a less bureaucratic organizational approach, and environmental transformations.

Fundamental products of culture change include a homelike environment and the support of individual life choices. This concept of moving from an institutional to an individualized model of care is illustrated as a continuum in **Exhibit 1** (Pioneer Network, 2010a). Models of care that are the most institutionalized are “provider-directed” with little consideration for elder preferences. In a less extreme representation, nursing homes operate under a “staff-centered” model where residents have some input, but staff members make the majority of decisions. “Person-centered” and “person-directed” care are

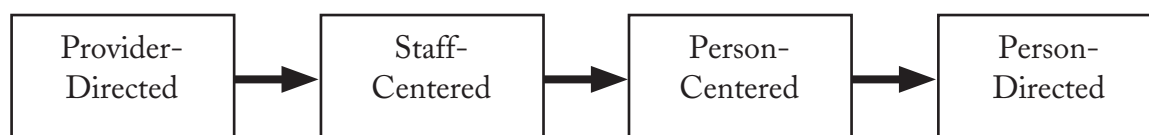
terms often associated with culture change. In person-centered care, residents express preferences for the majority of daily decisions. In person-directed care, residents make decisions as they would in their normal life or household. Residents with dementia are still consulted as much as possible, and staff members observe and learn lifelong preferences and patterns to form the basis for daily routines.

Background

Culture change began as a grassroots movement in the 1990s, surfacing from the passage of the Omnibus Budget Reconciliation Act of 1987 (OBRA '87) and the requirement that nursing homes meet the “physical, mental, and psychosocial needs of each resident.” The National Citizens Coalition for Nursing Home Reform (NCCNHR) was a leader in the passage of the legislation and worked diligently to involve providers, government representatives, consumers, and stakeholders at all levels of long-term care. Many of these stakeholders were progressive practitioners and the first adopters of transformative care. In 1995, NCCNHR invited a number of these practitioners to participate in a panel on quality of life innovations at its annual meeting. These individuals chose to continue meeting and eventually formed a “Pioneer Network” for culture change in long-term care. Since that time, Pioneer Network has continued to serve as an umbrella organization and communication conduit to collect and share adaptable practices and procedures that put person before task and create communication, networking, and learning opportunities for all levels of stakeholders (Pioneer Network, 2010b).

Other national organizations also have evolved to support person-centered practice; for example, PHI

Exhibit 1. Continuum of Person-Directedness (Pioneer Network, 2010a)



(PHI, 2010) and the Direct Care Alliance (Direct Care Alliance Inc., 2010) focus on advocacy for the direct caregiver side of the person-centered relationship. The Eden Alternative (Eden Alternative, 2010), Wellspring Innovative Solutions (Wellspring Institute, 2010), and Planetree (Planetree, 2010) are varying models of care that embrace resident-centered transformative approaches. The HATCH Model (Holistic Approach to Transformational Change), developed by Quality Partners of Rhode Island, integrates workforce, caregiving, and environment domains (Quality Partners of Rhode Island, 2010). THE GREEN HOUSE® Project, household model, and other small house models also emerged as environmental transformations from institutional structures to neighborhoods or small houses where residents and staff members “create home” in a household environment (The Green House Project, 2010).

Culture Change in Policy

In recent years, recognition of culture change has shifted from grassroots to a national level. In 2008, the Centers for Medicare and Medicaid Services (CMS) co-sponsored a national symposium, “Creating Home in the Nursing Home,” to promote discussion, dispel barriers, and coordinate action that supports culture change in nursing home environments (Pioneer Network, 2010c). Chief among the substantive outcomes of the symposium are the revisions to the “Guidance to Surveyors” for several quality of life and environment section tags (Interpretive Guidelines) by CMS. The new guidelines support culture change transformations through enhanced instructions to surveyors on how to evaluate compliance with regulations, including resident choices about daily schedules (e.g., when to get up, go to bed, eat, bathe), visitation issues, homelike environment, food procurement, and expand significantly on guidance related to lighting.

In addition to federal policy and dialogue, state culture change coalitions and state governments also are contributing to the discussion of culture

change transformations. More than 30 state coalitions have formed to advance culture change in their respective states (Provider, 2010). State survey agencies, ombudsman programs, and Departments of Aging also are often supporters (or are the catalysts) for change in states and communities (Provider, 2010). Pay-for-performance programs in states such as Colorado even incentivize culture change through increased Medicaid reimbursement (State of Colorado, 2010). Many states also provide funding through the use of Civil Monetary Penalties (CMP) funds for the activities of coalitions and person-centered initiatives of individual nursing homes (Provider, 2010).

These ongoing efforts of practitioners and policymakers were evident in 2010 with the passage of the Health Care Reform Act (HR 3590). This historic legislation includes a National Demonstration Project on Culture Change “for the development of best practices in skilled nursing facilities and nursing facilities that are involved in the culture change movement, including the development of resources for facilities to find and access funding in order to undertake culture change” (Patient Protection and Affordable Care Act, 2010, p. 602). With increasing levels of support for culture change in policy, a paradigm shift from an institutional to a person-centered model of care in nursing homes is plausible, if not inevitable, in the near future.

Purpose

As with any type of innovation, a primary question of providers and policymakers is “culture change at what gain?” While it seems intuitive that the impact of choice and autonomy in a homelike environment will positively affect quality of life for nursing home residents, the financial perspective for the organization is less apparent. Although nursing homes have historically equated quality with medical care, it is a well-accepted theory that independent and assisted living communities that provide consumers with choice and a sense of home are rewarded with satisfied customers, occupancy, and revenues. Since the

same goals of consumer choice and a homelike environment are inherent in culture change, this article explores the possibility that homes engaged in sustained culture change attain improved occupancy and revenue as a result of consumer-focused adaptations. Anecdotal accounts from providers implementing culture change corroborate this supposition, and recent descriptive statistics support the claim that these homes maintain occupancy significantly above the national mean (Pioneer Network, 2010d).

This article explores this hypothesis by using sustained culture change adaptation in nursing homes as a treatment variable in a quasi-experimental methodology to match adopter homes with control homes, and then utilizes a difference-in-difference (DID) approach to measure pre- to post-occupancy and revenue outcomes contrasted with outcomes for control homes during the same time frame. Through this methodology, the purpose of this study is to contribute to a further understanding of culture change and at what gain.

Culture Change in Theory and Practice: Literature Review

With flourishing support of culture change in policy, there is an increasing need for studies of person-centered care that develop the evidence base and bridge the gap between theory and practice (Rahman & Schnelle, 2008). Anecdotal accounts from nursing homes of improved outcomes in areas of quality, staffing, and financial performance are plentiful, and recent empirical studies support these claims. Environmental transformations to small or Green Houses are one area of research with findings that include greater perceptions of quality of life by residents (Kane, Lum, Cutler et al., 2007; Rabig et al., 2006). Other investigations focus on the role of staff and find benefits of empowered certified nursing assistant (CNA) work teams (Yeatts & Cready, 2007). Physicians (Stall, 2009) and directors of nursing (Mueller, 2007) in culture change environments have been studied with key insights into the role of the clinical leader in culture change. Some studies

are intervention specific such as a focus on dementia care in bathing (Rader, Barrick, Hoeffler, Sloane et al., 2006), the positive impact of resident-centered dining programs (Robinson & Gallagher, 2008; Bowman, 2010), and insights into transformations to traditional environments (Kane & Cutler, 2009). Further research addresses the development of quality of life (QOL) measurements, which are crucial to culture change evaluation (Kane et al., 2003; Sloane, Zimmerman, Williams et al., 2005; White, Newton-Curtis, & Lyons, 2008; Fulton, Edelman, Kuhn, & Cisco, 2006).

Often correlated with quality outcomes are hypotheses that address the financial and organizational outcomes of culture change. Prior research corroborates the correlation between innovation, quality, and financial outcomes in nursing homes (Hicks, Rantz, Petroski, & Mukamel, 2004). One common theme of these studies is the use of innovation or product differentiation to reduce costs while increasing quality and revenue. This theory of “doing better to do good” is increasingly linked to strategic adaptation in nursing homes (Zinn, Mor, Feng, & Intrator, 2007).

The concept of doing better to do good also is often discussed as a by-product of culture change. Providers report many beneficial organizational outcomes from culture change activities, including decreased staff turnover, increased customer satisfaction (residents, families, staff), improved Minimum Data Set Repository (MDS) accuracy (better reimbursement), a positive reputation in the community, and an overall stabilization occupancy (Farrell & Elliot, 2008). A study of a large nursing home chain found that culture change implementation positively impacted resident quality of life, staff satisfaction, and financial outcomes (Grant, 2008), and another study found participation with Pioneer Network positively impacts quality and financial results (Elliot, 2007). In a study of nursing homes with culture change improvements underway, 60% of homes with a high number of initiatives reported that culture change had an impact on occupancy (Doty, Koren, & Sturla,

2008). Research also indicates that improvements in occupancy can assist in recouping the cost of private rooms within 6.4 months (Calkins, 2008).

This consistent finding of the gains from higher occupancy in homes engaged in culture change innovation is intriguing. One hypothesis for this phenomenon is increased customer satisfaction from a homelike environment and consumer-directed choice in daily activities and care. Historically, quality in nursing homes has been equated to clinical care, and consumer Websites such as the CMS Five-Star Quality Rating System adhere to this concept (Medicare.gov, 2010); however, while many nursing home residents are post-acute and clinical stays, increasing numbers of nursing home residents are long-stays. In other words, the nursing facility becomes a place of residence in much the same way that assisted living or independent living communities provide a home in other stages of the long-term care continuum. A recent study found that residents of independent living communities that answered positively to “I feel that my residence here is my home” and “I have control over what I do” were more likely to be satisfied and recommend their

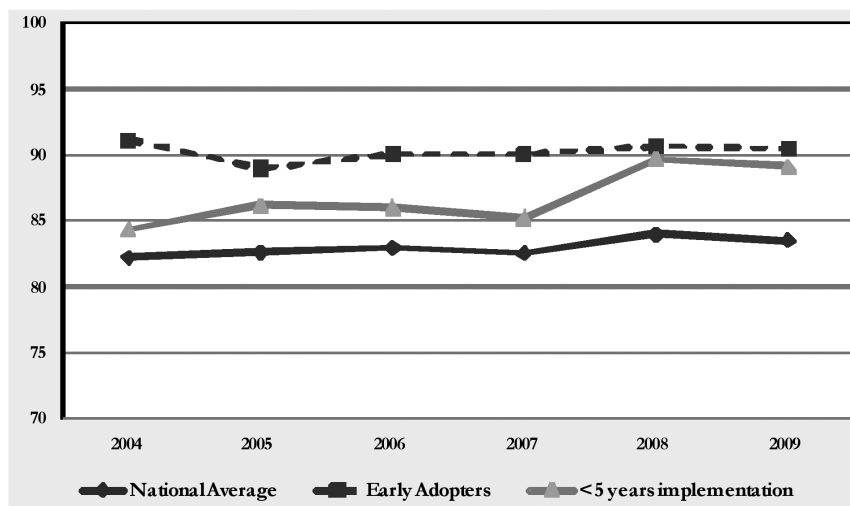
community to others (Wylde, Smith, Schless, & Bernstecker, 2009, pg. 9). It is logical to hypothesize that residents and families of nursing homes would view a quality product in much the same way.

Findings in Practice

In 2007, Pioneer Network began a multiyear study with a focus on the “case for adoption” that examines the beneficial outcomes of culture change implementation, including the correlation between quality and financial improvements. As part of this effort, adopter homes were identified and stratified by years of adoption. **Exhibit 2** details the longitudinal occupancy of these homes by years of adoption versus the national mean. As of 2004, early adopters with greater than five years of implementation maintained occupancy well above the national mean. Adopters with less than five years implementation began with occupancy near the national mean and then experienced steady increases through 2009. The result was post-implementation occupancy for the more recent adopter group of homes, nearly equal to the early-stage adopters and well above the national mean.

To further delve into this compelling statistic, a

Exhibit 2. Mean Occupancy Rate of Culture Change Adopters Versus the National Mean by Implementation Years



matched sample analysis pairs homes with analogous control homes pre- and post-implementation to test the hypothesis that occupancy significantly increased after culture change innovation. In addition, if culture change is a contributing factor in improved occupancy in nursing homes, this variable should translate to additional revenues post-implementation. The matched sample also explores this supposition in an analysis of resident revenues.

METHODOLOGY

Identification of Homes

To compile a list of treatment “adopter” homes for this study, 12 members of the Pioneer Network Board of Directors and 13 collaborating national culture change experts were asked to identify skilled nursing facilities that best exemplified homes engaged in sustained culture change innovation. For the purpose of the data collection, “best exemplify” was defined as homes deeply engaged in change for two years or more in key organizational areas of care practice, environment, and workplace.¹ Experts were provided a specific framework for each key organizational area to assist in the identification of homes and to promote consistency in choice criteria.² Specifically, homes on the list are most closely represented by a “person-directed” model, as highlighted in Exhibit 1. Assisted living and non-certified nursing homes were excluded, resulting in a list of 317 certified skilled nursing homes with valid provider numbers in the CMS’ data sets. These homes were then further stratified into homes implementing culture change for five years or more (early adopters) and

homes implementing culture change for less than five years (mid-stage adopters).

Data Sources

Descriptive and financial variables for this study were accessed from the CMS *Skilled Nursing Facility Cost Report*, which include facility characteristics, utilization data, cost, and charges by cost center, Medicare settlement data, and financial statement data (CMS, 2005). Annual submission of the *Report* is required for Medicare-certified nursing homes. To obtain additional variables for this study, *Report* data were merged with the CMS Nursing Home Compare data set. Nursing Home Compare data are sourced by facility from the Online Survey, Certification and Reporting (OSCAR) database and the MDS and maintained by CMS for each calendar year. These data contain relevant information regarding nursing home characteristics, staffing, quality outcomes, and information regarding health deficiencies. Data for activities of daily living and RUG case mix were obtained from LTCFocUS.org, which provides data for researchers to assess long-term care outcomes and trends with the goal of improving quality of care for older Americans (LTCFocUS.org, 2010).

Measures

To investigate the effects of sustained culture change implementation on organizational outcomes, two dependent variables were employed in this study. The first dependent variable, occupancy (defined as percentage of beds occupied), reflects evolving market conditions (Zinn, Mor, Feng, & Intrator, 2007) with ramifications for the second dependent variable, nursing home revenue (Castle, Enberg, Lave,

¹ A time frame of two years was chosen to allow for implementation efforts to translate into outcomes.

² This framework is based on the “Artifacts of Culture Change” developed by CMS (Artifacts of Culture Change, 2010). For example, homes engaged in sustained culture change care practice would be expected to offer residents alternative styles of dining and incorporate resident food preferences in meals. In addition, waking times and bedtimes would be chosen by residents in a sustained culture change home. Examples of environmental innovation for culture change homes include residents living in households or neighborhoods that are self-contained, remodeled, or removed nurse stations, and overhead paging systems that have been turned off or only used in case of an emergency. Exemplar workplace models would include components such as consistent staff assignments to residents, cross-training of other staff (so that additional staff can accommodate resident needs with ease), and resident-directed activities.

& Fisher, 2009). To control for variations in home size and total days included in *Report* filings, resident revenue was standardized to per bed per day revenue by nursing home. The treatment variable in this analysis was an indicator of sustained culture change implementation (as discussed in Identification of Homes).

In addition, several home level, independent variables were used in this study to control for variations affecting organizational outcomes. The location of the home (by state) controls for regulatory differences and variations in Medicaid reimbursement (Harrington, Mullan, & Carrillo, 2004; Grabowski, 2002). The type of ownership and chain affiliation of the home represents profit/nonprofit motivational differences and dissimilarities in economies of scale (Banaszak-Hall, Zinn, & Mor, 1996; Castle, 1999; Castle, 2001). The number of beds in a home is an approximation of size of a facility and a measurement of capital (Knox, Blankmeyer, & Stutzman, 1999). Acuity, case mix, and reimbursement are considered through the use of multiple independent variables, including percentage Medicare, Medicaid, and private paying census as well as ADL Index and Resource Utilization Group case mix index (Feng, Grabowski, Intrator, Mor, 2006). Total staff hours per resident per day by position (CNA, RN, LPN) addressed impact to care processes (Arling, Kane, Mueller et al., 2007) and related cost outcomes (Castle, 2001). Finally, the Herfindahl index (sum of square market shares of all facilities in a county) was included as a market level variable, indicating the level of competitiveness for a home and used to control for level of market competitiveness (Nyman, 1988; Grabowski, 2002; Mukamel, Spector et al., 2005).

Matched Sample Method and Descriptive Statistics

To determine whether sustained culture change practice has any effect on occupancy, this analysis utilized propensity score matching in a quasi-experimental design to compare organizational outcomes

of adopter homes with a group of analogous control homes. Data in these analyses are for homes from 2004 (pre-culture change time frame) and 2008 (engaging in culture change for at least two years). To achieve a true pre- to post-analysis, treatment homes engaged in culture change prior to 2004 (early adopters) were removed from the matched sample. Treatment and analogous homes included in the matched study filed cost reports in both 2004 and 2008 with non-blank responses in each of the matching variables. National data were cleansed for outliers on each of the matching parameters, resulting in a list of 185 adopter homes from 31 states and 9,759 analogous control homes as potential matches.

One of the key internal validity issues with this type of design is the extent to which groups are comparable before the study. Control homes for comparison should be counterparts of homes in sustained culture change based on matched observable characteristics that impact the likelihood of participation and potential resulting outcomes (Bryson et al., 2002). In response to this expectation, propensity score statistical matching (Rosenbaum & Rubin, 1984) allows for the creation of a control group of homes that closely resembles homes engaged in sustained culture change on observable characteristics that affect the likelihood of engagement and resulting outcomes. Rosenbaum and Rubin (1983) showed that this method of matching on a single index (which summarizes all the matching characteristics and reflects probability and participation) could achieve consistent estimates of the treatment effect in the same way as matching on all covariates.

Descriptive Statistics

Exhibit 3 outlines descriptive statistics for the 185 adopter homes and 9,759 analogous control homes and provides an illustration of the benefits of propensity score matching. Specifically, Exhibit 3 represents matching variables for the propensity score analysis, chosen based on prior research of innovation and organizational outcomes in nursing homes. Through

the matching process, this investigation identifies the characteristics of homes that are motivated to pursue organizational improvements through culture change implementation and answers the question of “who” was associated with this type of innovation in 2004. Controlling for these characteristics is essential in matching, because significant differences also could affect occupancy and revenue. Determining the appropriate observable characteristics is based in large part on knowledge of theoretical literature and prior empirical research (Bryson et al., 2002); for example, homes in the adopter sample were significantly more likely to be nonprofit in 2004. Prior studies assert that nonprofit nursing homes are more likely to engage in innovative activities motivated to improve quality of care (Banaszak-Hall, Zinn, &

Mor, 1996; Castle, 2001), and reported outcomes associated with culture change in 2004 were predominantly those of quality for the resident. Adopter homes also were more likely to be independent facilities than affiliated with a chain in 2004. This is not in concordance with prior research that indicated that chain-affiliated homes may engage in innovation based on additional resources and lower economies of scale (Castle, 1999). Still, the specifics of culture change in 2004 were largely undocumented, with few resources to support implementation, and many adopters were pioneering innovation in relative isolation. Even though chains are able to mitigate risk over multiple homes, innovation is often more structured with knowledge transfer facilitated at the corporate level. Thus, a smaller percentage of chain-

Exhibit 3. Descriptive Statistics for All Homes in Sample Pre-Matching

Variables	Mean of measure for homes in control sample (N = 9759)	Mean of measure for homes in sustained culture change (N = 185)
Resident % by type of ownership (for-profit = 1)	83	28***
Resident % by chain status (Yes = 1)	59	43***
Number of beds	116	141***
ADL Index	15.74	15.66
Resource Utilization Group Nursing Case Mix Index	82.14	81.33
RN hours per resident per day	.32	.40
LPN hours per resident per day	.75	.63
CNA hours per resident per day	2.23	2.49
Resident % by family group (Yes = 1)	45	52
Resident % by census Medicaid	63.22	55.01**
Resident % by census Medicare	13.25	11.23
Resident % by census other	23.52	33.03***
*** p -value ≤ 0.001		
** p -value ≤ 0.05		

affiliated homes may be indicative of the reluctance of chains to assume the risk of implementation without a preponderance of evidence to support return on investment. Since recent findings suggest that for-profit, chain affiliation is associated with poorer performance in occupancy (Zinn, Mor, Feng, & Intrator, 2007), controlling for these significant differences in profit type and chain affiliation is essential to diminish any influences of these variables on occupancy and revenue outcomes.

Variables by payment type, including the percentage of total census who are Medicare, Medicaid, and private-paying residents, also is crucial when accounting for length of stay and reimbursement affecting occupancy and revenue. As noted in Exhibit 3, the percentage of private-paying residents in 2004 was significantly higher in adopter homes. This is supported by a prior study that found that a higher percentage of privately paying residents in a nursing home resulted in innovation (Castle, 2001). Since revenues are notably affected by private-pay census, the matched sample of homes should control for this difference. Other variables, such as the average Nursing Case Mix Index (NCMI), the average Activities of Daily Living score,³ and staffing ratios, are matching variables used to control for acuity. To control for market concentration, homes were matched by Herfindahl index. This market variable indicates the level of competitiveness for a home

in a county (values closer to zero are competitive while values close to one are more monopolistic) (Grabowski, 2001). In addition, state reimbursement and regulatory variation is likely to affect occupancy and revenue, and homes were matched based on state of residence.

Based on the 2004 characteristics from the pre-participation time frame detailed in Exhibit 3, a stepwise logit was used to generate the best predictors for culture change innovation as well as occupancy and revenue.⁴ The predictors for the logistic regression model equate to the estimation of the probability of adopting culture change implementation. This probability estimation also is considered the propensity score. The result is that the control group of homes closely resembles adopter homes based on observable characteristics that affect both the likelihood of culture change implementation and organizational outcomes.

After adopter homes were matched to control homes, a DID regression model was approximated to test for statistically significant changes in occupancy pre- to post-culture change innovation contrasted with control homes during the same time frame. The use of the DID estimator in conjunction with matching aids is a research model comparable to randomized experiments (Conniffe, Gash, & O'Connell, 2000, p. 292). The DID estimation equates to the difference in outcomes for the adopter

³ The Activities of Daily Living (ADL) Score is sourced from LTCFocUS.org's 2004 provider level data downloads. The ADL score is calculated as a range from 0 to 28, based on a score of 0-4 on seven different ADLs. 0 indicates completely independent and 28 completely dependent (LTCFocUS.org, 2010).

⁴ NNMatch in Stata was used for this propensity score estimation. The logistic regression model for this portion of the analysis is as follows:

$$P_{ij} = \beta_0 + \beta_1 E_{ij} + \beta_2 C_{ij} + \beta_3 M_{ij} + \varepsilon_{ij} \quad (1.1)$$

where for nursing home *i* in state *j*

P is a dummy variable indicating adoption (adopters = 1, non-adopters = 0)

E is the vector of organizational characteristics (type of ownership, chain status, payor distribution)

C is the vector of internal organizational characteristics (number of beds, staffing ratios, ADL, RUG)

M is market concentration measured by the Herfindahl index (values closer to zero are competitive while values close to one are more monopolistic)

homes from the pre- to post-time frame minus the difference in outcomes of the control homes from the pre- to post-time frame.⁵ Next, a Wald test was employed to determine whether the differences were significantly different from zero. A positive final DID indicates that adopter homes achieved greater improvements in occupancy and revenue when compared to control homes from 2004 to 2008.

RESULTS

Propensity Score Estimation and Matched Sample Results

Based on the propensity score estimation derived from the logistic regression model, adopter homes were matched to control homes controlling for probability estimations for each independent variable. **Exhibit 4** reflects the match quality for all adopter and control homes (homes were matched by state) based on the independent variables hypothesized to affect sustained culture change engagement and outcomes. The average propensity score for adopter homes was .05. Comparably, the average propensity score of homes identified as matches also was .05. This indicates that the control group of homes closely resembled homes engaged in sustained culture change on observable characteristics that affect both the likelihood of culture change adoption and improved occupancy. Although **Exhibit 4** displays aggregated means of control and adopter homes, actual values also will be comparable at the home level and by state. Overall significant differences, as noted in the descriptive statistics, are controlled for

after propensity score matching, and values are relatively close or the same for adopters and controls; for example, the significant differences in profit-type are controlled for in the analysis and homes are matched to like profit status (e.g., nonprofit adopter homes are matched to nonprofit controls), resulting in 28% of the sample represented by for-profit controls and adopter homes. The same is true of other characteristics that were significantly different in the 2004 time frame, including chain affiliation (43% of controls and adopters), size (141-bed mean for adopters and 139-bed mean for controls), and private-pay census (33% for adopters and control homes).

Exhibit 5 details the results of the matched sample on occupancy rate that compares occupancy from a pre-culture change implementation time frame (2004) to a time when homes had been implementing culture change adaptations for at least two years (2008). Overall, adopter homes displayed significantly improved occupancy from 2004 to 2008 when compared to controls. The sample of adopter and control homes both maintained the same occupancy rate of 86% in the pre-implementation time frame in 2004. By 2008, the occupancy rate of adopter homes increased to 89% while control homes maintained the occupancy of the pre-time frame, resulting in a DID estimation of three. Both a Wald test and a t-test (used to examine whether the changes in occupancy are significantly different from zero) are significant ($p < .001$).

The matched sample for occupancy rate also was used to examine resident revenue. **Exhibit 6** illustrates the results of the matched sample on resident

⁵ To ascertain the extent to which pre- to post-outcomes are significantly different between adopter and control homes, a negative binomial regression model is approximated as the following:

$$O_{it} = \delta_0 + \delta_1 \text{NONPIO}_{it} + \delta_2 \text{PIOPRE}_{it} + \delta_3 \text{PIOPOST}_{it} + \varepsilon_{it} \quad (1.2)$$

where O_{it} is the outcome for home i in year t , NONPIO is a dummy variable equal to 1 if the outcome is for a comparison home in the post-time frame and equal to 0 otherwise, PIOPRE is a dummy variable equal to one if the outcome is for an adopter home in the pre-time frame and equal to 0 otherwise, and PIOPOST is a dummy variable equal to one if the outcome is for an adopter home in the post-time frame and equal to 0 otherwise. Since the omitted variable equates to outcomes for control homes in the pre-time frame, the coefficient on NONPIO_{it} , 1, corresponds to the difference in outcomes for control homes from 2004 to 2008. Similarly, the change in outcomes for adopter homes can be calculated from $\delta_1(\delta_3 - \delta_2)$. Finally, the DID estimate is calculated as the change in outcomes for adopter homes minus the change in outcome for control homes or $(\delta_3 - \delta_2) - \delta_1$.

Exhibit 4. Match Quality for All Adopter and Control Homes

Variables	Mean of measure for homes in sustained culture change (N = 185)	Mean of measure for matched homes (N = 185)
Resident % by type of ownership (for-profit = 1)	28	28
Resident % by chain status (Yes = 1)	43	43
Number of beds	141	139
ADL Index	15.66	15.60
Resource Utilization Group Nursing Case Mix Index	81.33	80.87
RN hours per resident per day	.40	.38
LPN hours per resident per day	.63	.64
CNA hours per resident per day	2.49	2.39
Resident % by family group (Yes = 1)	52	53
Resident % by census Medicaid	55.01	55.26
Resident % by census Medicare	11.23	11.56
Resident % by census other	33.03	33.08
Propensity score	.05	.05

Exhibit 5. Results of Matched Sample on Occupancy Percentage from 2004 to 2008 Time Frame

Year	Occupancy percentage non-adopters (N = 185)	Occupancy percentage adopters (N = 185)	DID estimate
2004	86	86	0
2008	86	89	3
Change	0	3	3***
***p-value ≤ 0.001			

revenue that compares revenue from a pre-culture change implementation time frame (2004) to a time when homes had been implementing person-directed transformations for at least two years (2008). Overall,

adopter homes achieved significantly improved revenue from 2004 to 2008 when compared to controls. Although not significantly, adopter homes maintained a slightly higher per bed per day revenue of

Exhibit 6. Results of Matched Sample on Revenue from 2004 to 2008 Time Frame

Year	Per bed/day revenue (\$) non-adopters	Per bed/day revenue (\$) adopters	DID estimate
2004	194.98	205.41	10.43
2008	228.35	250.21	21.86
Change	33.37	44.80	11.43**
** p -value ≤ 0.05			

\$205.41 in 2004 (control homes generated revenues of \$194.98). In the post-time frame, adopter homes increased per bed per day revenue by \$44.80 to \$250.21. Control homes also increased revenue to \$228.35, but only by \$33.37, resulting in a DID estimation of \$11.43 ($p < .05$).

The finding of a 3% increase in occupancy for adopter homes supports the revenue improvements in Exhibit 6; for example, control homes experienced no growth in occupancy but a 17.11% increase in patient revenue from the pre- to post-time frame. A 2008 Genworth Financial study found a 17% increase in room rates from 2004 to 2008 (Genworth Financial, 2008), which supports a supposition that control homes achieved additional revenues through rate changes. Conversely, adopter homes achieved a 21.81% increase in per bed per day revenue. This additional 4.7% change over control homes indicates that the adopter increase in revenue from 2004 to 2008 was likely more than just a standardized rate change. The finding of 3% occupancy growth would account for an added 4.2 occupied beds each day in a 140-bed home and could account for much of that differential. Thus, on average and with other factors accounted for, implementing culture change resulted in an additional \$1,600 per day (\$584,073 per year) for a standardized 140-bed nursing home over control homes from the 2004 to 2008 time frame.

DISCUSSION

The results detailed in this article provide support

for the theory that culture change implementation results in increased occupancy and revenue for adopter homes. Homes in the sample were representative of the characteristics of adopters in the 2004 time frame, which included larger, nonprofit homes with a higher percentage of private-paying residents. Given that nonprofit, mission-driven homes implemented culture change and that homes were already doing well with private-pay income, these results indicate that profitability was probably not a motivation in this stage of adoption. Nursing homes in the sample also were more likely to be independent and not affiliated with chains in the 2004 time frame. If for-profit chains were reluctant to invest in person-directed adaptations, these results indicate that culture change is not counterintuitive from a financial perspective and that homes can invest in quality of life for residents and still achieve organizational returns.

Homes engaged in sustained culture change achieved an additional 3% occupancy and \$11.43 in per bed per day resident revenue from the 2004 to 2008 time frame. This equates to an added \$584,073 per year in a 140-bed adopter home over an analogous control home. These findings also imply that preferences for autonomy and the feeling of “home” do not simply dissipate when an elder is further along in the continuum of care. Certainly quality of care is an integral decision parameter for elders with clinical needs; however, the person-centered living options available through culture change also influence the choice of homes, as evidenced by improved

occupancy rates and higher revenues.

Of course, culture change is not a panacea for the industry. Nursing homes are hampered by a complicated framework that enforces a litany of dichotomous quality and financial mandates further complicated by the government's dual roles as the regulator charged with maintaining quality as well as the primary payor of nursing home services concerned with lowering costs. While culture change cannot completely ameliorate these issues in nursing homes, federal policy through the Interpretive Guidelines and increasing numbers of state pay-for-performance programs are recognizing culture change as positively affecting quality without a detrimental effect on the organization. This article validates the idea that this type of policy can result in gains for the organization.

These findings also support returns on investment from implementation. Ultimately, whether through allocation of time, resources, or money, culture change requires investment by the organization in areas such as staffing, education, systems, communication, and environment. This study only addresses revenue gains and not the cost of investment in culture change; however, revenue generation has the potential to offset those investments and contribute to positive returns. The overall effect of culture change to the bottom line (profit/loss) for an organization is a question for future research, but anecdotal reports by adopters suggest cost savings in areas such as lower turnover, fewer agency staff, reduced food costs, and decreased waste (Farrell & Elliot, 2007). All these factors contribute to mean operating margins equal to or above the national average (Pioneer Network, 2010d). Quality improvements also can contribute to cost savings for homes, consumers, and government payors. This article does not address quality improvements, but many of the aforementioned studies have concluded positive outcomes in quality of life and staffing outcomes.⁶

Although additional research on cost and quality outcomes of culture change is needed, there also is a common sense, pragmatic argument for culture change in nursing homes. Intuitively, a self-directed life in a non-institutional environment is favorable to the traditional alternative. This reality coupled with increased revenue suggests that culture change is a “win-win” business investment for providers and a life choice for residents of nursing homes.

Limitations

While the findings of this study provide compelling support for revenue gains from culture change implementation, there are notable limitations to this analysis. Although the propensity score methodology attempts to control for key organizational, market, and staffing factors, nursing homes are complex environments with many variables affecting occupancy and revenue. Matching by state attempts to control for many of these components, but issues that affect senior transitions in long-term care, such as consumer demand, cost of living, taxes, real estate markets, and the availability of viable substitutes for nursing home services, could deviate at the local, city, or county level. Hence, additional analysis is needed to model for these external economic and market complexities.

A second limitation is that this analysis does not control for specific interventions occurring in homes. Accordingly, it is possible that adopter homes benefited from a form of culture change “branding” with the outside community that improved market position. This draws on the economic theory of “club goods” where homes profit from the reputation and positive image established through even minor implementation efforts (Prakash & Potoski, 2007). Conversely, homes that undertook major environmental, capital-intensive transformations or large operational overhauls may have occupancy and revenue gains from a highly enhanced environment

⁶ A future investigation with the adopter data set from this study will utilize quality as a dependent variable to further explore this question.

while also experiencing detrimental increases to costs. This study does not attempt to measure goodwill associated with implementation or the longitudinal effects of return on investment, and the level and relative impact of these potential confounders are viable questions to be elucidated in future research. In particular, a thorough analysis of the bottom line (profit/loss) for these homes when controlling for investment would contribute to a more thorough understanding of the costs of culture change in areas such as environmental transformations, staff development, and organizational systems.⁷ Finally, although person-centered care is intuitively beneficial for consumers, building the evidence base in this area also is a critical component of more widespread dissemination.

CONCLUSION

While there are still many questions left to answer, these results provide compelling support for culture change adoption by answering “culture change at what gain?” Since the institutional paradigm of long-term care in nursing homes is not sufficient to meet the needs of a growing baby boomer population of savvy and demanding consumers, culture change and person-centered innovation provide a new and timely model of living for nursing home providers and consumers. In many ways, institutional models devalue the preferences of nursing home residents, especially those in long-stay environments where clinical care is only one facet of a resident’s daily life. Hence, a superior nursing home “product” in the 21st century may look, feel, and operate on an entirely different level than homes in the past. In order to attract a strong consumer base, providers, investors, boards of directors, and CEOs should consider culture change as a valuable innovation and smart investment for a

new age of long-term care.

AUTHOR

Amy E. Elliot, PhD
Policy Analyst
Pioneer Network
P.O. Box 18648
Rochester, NY 14618
E-mail: amy.elliott@pioneenetwork.net

ACKNOWLEDGEMENTS

This study was supported by the Commonwealth Fund, a national, private foundation based in New York City that supports independent research on health care issues and provides grants to improve health care practice and policy. The views presented herein are the author’s and are not necessarily those of the Commonwealth Fund, its directors, officers, or staff.

The author also wishes to thank the Pioneer Network Board and national culture change experts for participating in the data collection effort and to reviewers of this article for their incredibly insightful comments.

© 2010, National Investment Center (NIC) for the Seniors Housing & Care Industry

REFERENCES

- Artifacts of Culture Change. (2010). Retrieved April 2, 2010, from <http://www.artifactsofculturechange.org/ACCTool>.
- Arling, G., Kane, R., Mueller, C., Bershadsky, J., & Degenholtz, H. (2007). Nursing efforts and quality of care for nursing home residents. *The Gerontologist*, 47, 672-682.
- Banaszak-Holl, J., Zinn, J. S., & Mor, V. (1996). The impact of market and organizational characteristics on nursing care facility service innovation: A resource dependency perspective. *Health Services Research*, 31, 97-117.
- Bowman, C. (2010). The Food and Dining Side of the

⁷ Examples of investment in environmental transformations could include the building of small houses or Green Houses homes, retrofitting existing homes into households or neighborhoods, renovating dining environments, purchasing lighting more conducive to impaired vision, or creating new activities. Areas of investment in staff development could include person-centered education, orientation, cross-training, and human resources practices. Examples of investment in organizational systems could include implementation of consistent staffing, developing a flattened organizational structure, and use of “I” care plans to accommodate resident preferences.

Culture Change Movement: Identifying Barriers and Potential Solutions to Furthering Innovation in Nursing Homes. Pre-symposium Paper: Creating Home in the Nursing Home II: A National Symposium on Culture Change and the Food and Dining Requirements. Retrieved March 10, 2010, from <http://www.pioneer-network.net/Data/Documents/dining%20symposium%20background%20paper%201-28-10.pdf>.

Bryson, A., Dorsett, R., & Purdon, S. (2002) *The use of propensity score matching in the evaluation of active labour market policies*. London, UK: Policy Studies Institute and National Centre for Social Research.

Calkins, Margaret P. (2007). Envisioning your future in a nursing home. Retrieved March 10, 2010, from <http://www.pioneer-network.net/Data/Documents/CalkinsPrivateRoomsPaper.pdf>

Castle, N. G. (1999). Quality improvement and top management in nursing homes. *Journal of Quality Management*, 4, 95-109.

Castle, N. G. (2001). Innovation in nursing homes: Which facilities are the early adopters? *The Gerontologist*, 41, 161-172.

Castle, N. G., Engberg, J., Lave, J., & Fisher, A. (June 2009). Factors associated with increasing nursing home closures (chronic illness and nursing homes). *Health Services Research*, 44, 1088-1109.

Centers for Medicare and Medicaid Services. (2005). *Skilled Nursing Facility CMS-2540-96*. Retrieved April 5, 2005, from http://www.cms.hhs.gov/data/download/hcris_snf/default.asp.

Conniffe, D., Gash, V., & O'Connell, P. J. (2000). Evaluating programmes: Experiments, non-experiments and propensity scores. *The Economic and Social Review*, 31, 283-308.

Direct Care Alliance, Inc. (2010). *About Us*. Retrieved March 3, 2010, from <http://www.directcarealliance.org>.

Doty, M., Koren, M., & Sturla, E. (May, 2008). *Culture change in nursing homes: How far have we come?* Findings from the Commonwealth Fund: 2007 National Survey of Nursing Homes. New York: Commonwealth Fund.

Eden Alternative. (2010). *About the Eden Alternative*. Retrieved March 3, 2010, from <http://www.directcarealliance.org>.

Elliot, A. (2007). *An analysis of participation, quality of care and efficiency outcomes of an inter-organizational network of nursing homes*. Unpublished doctoral dissertation, The Ohio State University.

Farrell, D., & Elliot, A. (August, 2008). Investing in culture change: Long-term care leaders speculate why it works. *Provider*, 18-30.

Feng, Z., Grabowski, D. C., Intrator, O., & Mor, V. (2006). The effect of state Medicaid case-mix payment on nursing home resident acuity. *Health Services Research*, 41, 1317-1336.

Fulton, B., Edelman, P., Kuhn, D., & Cislo, A. (2006). Observing quality of life in dementia settings. *Seniors Housing*

& Care Journal, 14, 79-84.

Genworth Financial. *Genworth 2008 Cost of Care Survey*. Retrieved April 10, 2010, from http://www.genworth.com/content/products/long_term_care/long_term_care/cost_of_care.html.

Grabowski, D. C. (2001). Medicaid reimbursement and the quality of nursing home care. *Journal of Health Economics*, 20, 549-569.

Grabowski, D. C. (2002). The economic implications of case-mix Medicaid reimbursement for nursing home care. *Inquiry*, 39, 258-278.

Grant, L. (February, 2008). *Culture change in a for-profit nursing home chain: An evaluation*. Commonwealth Fund, pub. no. 1099. New York: Commonwealth Fund.

Green House Project. (2010). *Learn About Us*. Retrieved March 3, 2010, from <http://www.thegreenhouseproject.org/about>.

Harrington, C., Mullan, J., & Carrillo, H. (2004). State nursing home enforcement systems. *Journal of Health Politics, Policy and Law*, 29(1), 43-73.

Hicks L. L., Rantz M. J., Petroski G. F., & Mukamel. D. B. (2004). Nursing home costs and quality of care outcomes. *Nursing Economics*, 22(4), 178-192.

Kane, R. A., Kling, K. C., Bershadsky, B., Kane, R. L., Giles, K., Degenholtz, H. et al. (2003). Quality of life measures for nursing home residents. *Journals of Gerontology Series A: Biological Sciences & Medical Sciences*, 58A, M240-M248.

Kane, R. A., Lum, T. Y., Cutler, L. J., Degenholtz, H. B., & Yu, T. C. (2007). Resident outcomes in small-house nursing homes: A longitudinal evaluation of the initial Green House program. *Journal of the American Geriatrics Society*, 55, 832-839.

Kane, R. A., & Cutler, L. J., (2009). Promoting homelike characteristics and eliminating institutional characteristics in community-based residential care settings: Insights from an 8-State Study. *Seniors Housing & Care Journal*, 17, 15-37.

Knox, K. and Blankmeyer, E. & Stutzman, J.R. (1999). Relative economic efficiency in Texas nursing facilities: A profit function analysis. *Journal of Economics and Finance*, 23(3), 199-213.

LTCFocusUS.org. (2010). Shaping Long-Term Care in America Project at Brown University funded in part by the National Institute on Aging (1P01AG027296). Retrieved April 1, 2010, from <http://ltafocus.org/About.aspx>.

Medicare.gov. (2010). *Nursing Home Important Information: Five-Star Quality Rating*. Retrieved April 16, 2010, from <http://www.medicare.gov/NHCompare/static/tabhelp.asp?language=English&activeTab=6&subTab=0&version=>

Mueller, C. (2007). Nursing leadership and nursing home culture change. *60th Annual Scientific Meeting*, San Francisco, CA., 47.

- Mukamel, D. & Spector, W. (2003). Quality report cards and nursing home quality. *The Gerontologist*, 43(2), 56-66.
- Mukamel, D., Spector, W. et al. (2005). Nursing home spending patterns in the 1990s: the role of nursing home competition and excess demand. *Health Services Research*, 40, 1040-1055.
- Nyman, J. A. (1988). The effect of competition on nursing home expenditures under prospective reimbursement. *Health Services Research*, 23, 555-574.
- Patient Protection and Affordable Care Act of 2010, Pub. L. No. 111-148 (2010).
- PHI. (2010) *About PHI*. Retrieved March 3, 2010, from <http://phinational.org/about>.
- Pioneer Network. (2010a). *Continuum of Person-Directed Culture*. Retrieved March 10, 2010, from <http://www.pioneernetwork.net/Providers/Continuum>.
- Pioneer Network. (2010b). About Pioneer Network. Retrieved March 10, 2010, from <http://www.pioneernetwork.net>.
- Pioneer Network. (2010c). *Creating Home in the Nursing Home I: A National Symposium on Culture Change and the Environment Requirements*. Retrieved February 27, 2010, from <http://www.pioneernetwork.net/Events/CreatingHomeI>.
- Pioneer Network. (2010d). *The Cost and Quality of Culture Change*. Retrieved March 10, 2010, from <http://www.pioneernetwork.net/Providers/National>.
- Planetree. (2010). *Planetree Model - Continuing Care*. Retrieved March 3, 2010, from <http://www.planetree.org/about.html>.
- Prakash, A. & Potoski, M. (2007). Collective action through voluntary environmental programs: A club theory perspective. *Policy Studies Journal*, 35, 773-792.
- Provider. (May, 2010). *Extra News Online: Culture Change in the States*. Retrieved May 3, 2010, from <http://www.ahcancal.org/News/publication/Provider/ENOCultureChange.pdf>.
- Quality Partners of Rhode Island. (2010). *HATCH Model - Individualized Care*. Retrieved March 3, 2010, from <http://www.qualitypartnersri.org/cfmodules/objmgr.cfm?Obj=NursingHomeQIOSC&cpmid=124&mid=124&cid=124&clear=yes&bc=HATCH%20Model%20%20%20-%20%20%20Individualized%20Care&bc1=1>.
- Rabig, J., Thomas, W., Kane, R. A., Cutler, L. J., & McAlilly, S. (2006). Radical redesign of nursing homes: Applying the Green House concept in Tupelo, Mississippi. *The Gerontologist*, 46, 533-539.
- Rader, J., Barrick, A. L., Hoeffler, B., Sloane, P., McKenzie, D., Talerico, K., & Glover, J. (2006). Bathing of Older Adults with Dementia: Easing the unnecessary unpleasant aspects of assisted bathing. *American Journal of Nursing*, 106(4):40-48.
- Rahman, A. N., & Schnelle, J. F. (2008). The nursing home culture-change movement: Recent past, present, and future directions for research. *The Gerontologist*, 48, 142-148.
- Robinson, G. & Gallagher, A. (Apr-Jun 2008). Culture change impacts quality of life for nursing home residents. *Topics in Clinical Nutrition*, 23, 120-130.
- Rosenbaum, P. & Rubin, D. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70(1), 41-55.
- Rosenbaum, P. & Rubin, D. (1984). Reducing bias in observational studies using sub classification on the propensity score. *Journal of the American Statistical Association*, 79(387), 516-524.
- Sloane, P., Zimmerman, S., Williams, C., Reed, P., Gill, K., & Preisser, J. (2005). Evaluating the quality of life of long-term care residents with dementia. *The Gerontologist*, 45, 47-49.
- Stall, R. (2009). The physician's role in long-term care culture change. *Journal of American Medical Directors Association*, 10, 587-588.
- State of Colorado Department of Health Care Policy and Financing. (2010). *Nursing Facility Pay-Application Review*. Retrieved March 5, 2010, from <http://www.colorado.gov/cs/Satellite?blobcol=urldata&blobheader=application/pdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1251602196126&ssbinary=true>.
- Wellspring Institute. (2010). Retrieved March 3, 2010, from <http://www.wellspringis.org/index.html>.
- White, D. L., Newton-Curtis, L., & Lyons, K. (2008). Development and initial testing of a measure of person-directed care. *The Gerontologist*, 48, 114-123.
- Wylde, A., Smith, E., Schless, D., & Bernstecker, R. (2009). Satisfied residents won't recommend your community but very satisfied residents will. *Seniors Housing & Care Journal*, 17, 3-13.
- Yeatts, D., & Cready, C. (2007). Consequences of empowered CNA teams in nursing homes: A longitudinal assessment. *The Gerontologist*, 47, 323-339.
- Zinn, J., Mor, V., Feng, Z., & Intrator, O. (2007) Doing better to do good: the impact of strategic adaptation on nursing home performance. *Health Services Research*, 42, 1200-1218.